

**REMARKS**

Claims 1-13 are pending in this application. Claim 14 is cancelled. Claims 1 and 7 are amended. Claims 15-16 are newly added. Applicant submits that no new matter has been added.

Claim 7 stands objected to as containing an insufficient antecedent for the limitation "the outer diameter". Applicant has amended claim 7 to provide antecedent basis for the outer diameter and the inner diameter limitations, and submit that the objection has been overcome.

Claims 1-4 and 7-12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Martinelli (WO 01/30257) in view of White (US Patent No. 6,656,184). Applicant traverses the rejection.

Applicant respectfully submits that claims 1-4 and 7-12, as currently amended, are not obvious over the cited combination of Martenelli and White. As amended, claim 1 recites a bone marker for use in image guided surgery that comprises a support having an anchor mechanism for anchoring the support in a bone, at least one reference member detectable by an image guided system, the at least one reference member being attached to the support, and wherein the support comprises at least one limb that is resiliently deformable and is configured such that, when the anchor mechanism is disposed within the bone, at least a portion of the at least one limb extends away from the bone.

In contrast to the claimed invention, none of the cited prior art references describe or suggest the claimed bone marker. As a starting point, as described in the Office Action, Martenelli fails to describe a bone marker having a resiliently deformable limb. Martenelli describes a simple bone marker, consisting of an anchor 14 for anchoring the marker into bone, and a sensor 12 attached to the anchor. Martenelli does not describe a deformable limb, nor does it suggest a need to provide such a feature.

The Examiner contends that White describes a resiliently deformable limb, and suggests that White is combinable with Martenelli to render obvious independent claim 1. Applicant submits that there is no teaching, suggestion or motivation to combine White with Martenelli, and even if combined the two references do not teach the invention as now claimed.

White describes a bone screw for securing two or more bone fragments together. The White bone screw has a distal portion 12 having a threaded surface, a proximal head portion 16 for driving the bone screw into bone, and an intermediate portion having a compressive member 22. The compressive member 22 is stretched prior to insertion into bone and filled with a resorbable material, which is permitted to harden, thereby preventing the compressive member from returning to its relaxed state. White, col 4:55-col 5:13. The bone screw of White is then screwed into a first bone fragment, as shown in Figures 4, and through and into a second bone fragment, as depicted in Figure 5, until it resides almost entirely within the bone, as depicted in Figure 6. Thus, in its final state, when the anchoring member is disposed within the bone, the compressive member 22 of White is also disposed within the bone.

The Examiner contends that one skilled in the art would modify the limb of Martenelli to make it resiliently deformable “in order to conserve moderate tension in the bone marker over time and to provide various rates of compliant fixation” and cites three portions of White’s specification to support the statement. The quoted language describes White’s rationale for inventing an improved bone screw, but does not teach, suggest or provide a motivation to combine the compressive member 22 with Martenelli. The motivation to provide a compressive member in White is to improve the performance of conventional bone screws, which are said to fail to provide tension in the bone screw over time. That is, the compressive member in White was added to provide a bone screw that better fixes bones together. Such a motivation does provide a motivation to add a resiliently deformable limb to Martenelli. Martenelli is a bone marker, not a bone screw. It is not intended to fix bones together. The sensor of Martenelli is exposed outside the bone. The screw of Martenelli is simply used to attach the sensor to the bone.

Further, Martenelli does not provide a suggestion, teaching or motivation to combine the compressive member of White with the bone marker described in Martenelli. There is no discussion of the benefits of the resiliently deformable limb provided by the present invention. Among other benefits, the bone marker of the present invention: reduces the risk of the bone marker (which is attached to the resiliently deformable limb) being moved inadvertently during surgery; reduces the chance of bone being damaged at the anchor point of the bone marker; and reduces the force necessary to anchor the bone marker into the bone. None of these issues is discussed in White or Martenelli.

Even if White and Martenelli are combinable by one skilled in the art (which Applicant contends should not be), the combined references still do not describe the

invention of claim 1, as amended. Applicant has amended claim 1 to further differentiate the claimed invention from the cited prior art. Claim 1 recites a bone marker that, among other elements includes at least one limb that is resiliently deformable and is *configured such that, when the anchor mechanism is disposed within the bone, at least a portion of the at least one limb extends away from the bone*. If the compressive member of White were combined with Martenelli, the resulting device would not provide for a resiliently deformable limb configured such that at least a portion of the limb extends from the bone when the anchor mechanism is disposed within the bone. The screw/anchor portion of Martenelli is disposed within the bone; the intermediate, compressive member and the distal, threaded portion of White are also disposed within bone. The only aspect of White that extends outside of bone is the head. Similarly, the only aspect of Martenelli that extends away from the bone is the sensor member. Combining the two references does not describe a limb that extends away from the bone.

In short, there is no teaching, suggestion or motivation to combine White and Martenelli; neither reference recognizes the problem sought to be addressed in the present invention; and there is no rationale to combine the two references. For these and further reasons, Applicant submits that the claimed invention is not obvious in view of the proposed combination.

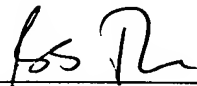
With regard to claim 9, Applicant submits that Martenelli fails to show a coupling member that is adjustable to allow rotation of the support about the fixation member. In fact the housing 26 of Martenelli is described as being fixed to the screw 14. See page 7, line 18- page 8, line 2. It is not understood how the cited passages of Martenelli support the Examiner's contention.

Claim 5 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Martinelli et al. in view of White et al as applied to claim 1 above, and further in view of Nassar et al. (US Patent No. 5,389,107). Claim 6 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Martinelli et al. in view of White et al, as applied to claim 1 above, and further in view of Lieberman (US Patent No. 6,527,774). Claim 13 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Martinelli et al. in view of White et al. as applied to claim 1 above, and further in view of Henderson et al. (US Patent No. 6,591,699).

Applicants contend that claims 5, 6 and 13 are patentable at least as they depend from an allowable independent claim.

Applicant grants the Commissioner permission to charge the deposit account no. 10-0750/DEP5167/BST for any fees or charges related to this application. Applicant respectfully requests the Examiner to contact the below-signed if a discussion regarding the merits would advance prosecution of this case.

Respectfully submitted,

  
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